

Amendment under 37 CFR §1.116
Application No. 10/615,193
Attorney Docket No. 000138A

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AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1-4. (Canceled)

5. (Currently amended): A process for heating a thixocast Fe-based alloy material having a chilled structure into a semi-molten state in which solid and liquid phases coexist, the process comprising:

heating said Fe-based alloy material setting having a chilled structure from a room temperature to a point A₁ in an Fe-C based equilibrium diagram, wherein an average rate H_R of heating from about a room temperature to a point A₁ in an Fe-C based equilibrium diagram is set to be in a range of $0.5^{\circ}\text{C}/\text{sec} \leq H_R \leq 6.0^{\circ}\text{C}/\text{sec}$, and setting a maximum temperature gradient T_G of the inside of the Fe-based alloy material per unit distance is set to be at $T_G \leq 7^{\circ}\text{C}/\text{mm}$; and

further heating said Fe-based alloy material into a semi-molten state in which solid and liquid phases coexist.

6. (Original): A process for heating a thixocast Fe-based alloy material according to claim 5, further setting a sonic velocity Sv of said Fe-based alloy material determined by an ultrasonic velocity measurement to be at $Sv \geq 5,600 \text{ m/sec}$.